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Canada's Coal Demand

An International and National Problem

By ARTHUR V. WHITE

Consulting Engineer, Commission of Conservation of Canada



Presented at the Twelfth Annual Convention of the Canadian Gas Association,
Niagara Falls, Ont., August 21st, 22nd and 23rd, 1919.

NOTE

The Canadian Gas Association has received numerous requests for copies of the address on *Canada's Fuel Demand—An International and National Problem*, delivered, on 22nd August, 1919, by Mr. Arthur V. White at the recent Annual Convention of the Association held at Niagara Falls, Canada. Consequently, the Executive of the Association has had the address printed in present form for distribution. Its perusal clearly demonstrates the great importance of this subject, the gravity of which, so far as Canada's national welfare is concerned, can scarcely be over stated. It is believed that you will find the address of deepest interest.

Yours, etc.,

G. W. ALLEN,
Secretary Canadian Gas Association

Toronto, Canada

Canada's Coal Demand

AN INTERNATIONAL AND NATIONAL PROBLEM

Address Before the Canadian Gas Association by ARTHUR V. WHITE,
Consulting Engineer, Commission of Conservation of Canada

Mr. Chairman and Gentlemen:

Permit me first to say that it is indeed a great pleasure to be present at your Convention, and I desire to express heartiest appreciation of your courtesy in inviting me to address you upon this occasion.

Your President, Mr. Folger, and Secretary, Mr. Allen, in requesting me to speak concerning the coal situation, assured me that I need not feel compelled to deliver an extended address. Pressure resulting from my regular duties has made it necessary for me in measure to accept this kind assurance. I shall, however, briefly outline some of the international and national aspects of the coal problem of Canada. This cannot be done without at least touching upon certain basic features, and hence you must bear with me for the short time necessarily required to review such.

The importance of the subject which we are to discuss demands most serious and comprehensive consideration. Indeed, apart from the maintenance of the proper morale of the nation and of the sources and distribution of food, there is, I believe, no question involving physical matters which is of such vital issue to Canada as her fuel problem. As some of you know, for many years and whenever occasion has offered I have been emphasizing the gravity of this problem and the need for taking prompt and adequate national action respecting its solution.

To-day, although having in mind the annual coal

shortage again menacing us, I desire, nevertheless, to treat our subject more in its broader aspects.

European Civilization Jeopardized by Fuel Shortage

Although we have had coal shortages in Canada and a measure of accompanying distress, yet, after all, the great mass of our people have been practically unharmed by the stress of coal conditions. It may not always be so. Through failure to deal adequately and in a broad, statesmanlike manner with her national coal problem, Canada courts trouble and, I believe, may yet experience such a "pinch" with respect to her fuel supplies as will seriously affect her economic welfare, involving, of course, her financial institutions. Is it not of the deepest significance that Mr. Herbert Hoover in the early part of this month, speaking as head of the International Relief Organization of Europe, stated that "the fate of European civilization now rests in the hands of the coal and coal mine owners of Europe to an equal if not a greater degree than in the hands of the producers of foods and supplies during the next year." Mr. Hoover contends that only greatly increased coal production and an improved organization for its distribution can save Europe from disaster during the coming year.

As already mentioned, we in Canada have been comparatively free from experiencing the keener distresses of coal privation. It is true that during previous coal shortage many people have had to

get along from hand to mouth. Coal has had to be doled out in small lots and in 1917-18, I understand, was even expressed in 100-lb. parcels to effect relief in certain localities, and so on; but speaking generally, we, nationally, have not had anything like the distress respecting fuel which has been extensively experienced by European countries.

Some European Coal Conditions

Let us begin by briefly surveying certain present world coal conditions, and as we do so kindly bear in mind one fact, namely, that the United States, which furnishes us so large a part of our annual coal supply, has now become much more closely associated with world markets and world conditions. She is rapidly assuming a premier position as a coal exporter, and older European countries are eagerly looking to her for 'first aid.' In our survey it will be appropriate to consider coal statistics as applicable in 1913—just before the war. *

Britain a Large Coal Exporter

The countries of Western and Southern Europe even in normal times are badly circumstanced for fuel. France, Italy, Norway, Sweden and Portugal have been largely dependent for their coal on Great Britain. In 1913, Britain supplied for export to continental Europe about 50,000,000 tons of coal, of which France took 20,000,000 tons, Italy 9,650,000 tons, Sweden 4,560,000 tons, Norway 2,300,000 tons, Spain 3,650,000, Denmark 3,030,000 tons, Holland 2,010,000 tons, Portugal 1,360,000 tons, other Mediterranean countries 3,500,000 tons. In addition Great Britain sent about 9,000,000 tons to South America and 5,000,000 tons to other parts of the world.

Britain's exported coal before the war constituted in point of value $8\frac{1}{2}$ per cent., and in point of weight 75 per cent., of her total export trade. This coal serves as ballast for outgoing boats and enables them to return to home ports with raw material and foodstuffs. It is evident therefore what prime bearing Britain's coal industry has to her export trade. What are the conditions in Great Britain to-day? At the present time, owing to exhaustion of stocks, to shortened hours of labour, to decrease of transportation facilities, to strikes—including the recent coal miners' strike, alone involving 250,000 men—Great Britain's annual rate of production has fallen about 70,000,000 tons short of pre-war conditions. If the restrictions on her home consumption

* Certain general statistics respecting coal vary considerably according to the basic elements respectively governing their selection and compilation. The quantities here presented are believed to be conservative and are employed primarily to set forth the general world conditions here discussed.

are removed, it has been estimated that she may have 7,000,000 tons of coal for export during the coming year. If the restrictions are maintained, this amount may be brought up to 28,000,000 tons. But even if all this coal were shipped to Western and Southern Europe, there would for these areas still result a deficiency of more than 25,000,000 tons. This leaves out of consideration South America and other portions of the world previously supplied by Britain.

Coal Conditions in France

In France, the coal mines destroyed by the Germans—both wantonly and for military necessity—formerly produced 20,000,000 tons per annum. French engineers state that it will take from two to five years to rebuild the operating equipment, and ten years to completely restore the production rate of these mines. France, however, will be able to increase her fuel supplies owing to the occupation of the Sarre District. But she has to replace her former importation where deprived of same. France still faces serious coal shortage.

Coal Conditions in Italy

Italy's condition with respect to fuel throughout the war period has been desperate. In 1913 she was producing less than 750,000 tons of coal per annum and, as we have seen, was importing from Great Britain some 10,000,000 tons. During the war, at great expense, she was able to increase her home production of an inferior grade of fuel by about 1,000,000 tons. This month Italy has ordered that 300,000 tons of her shipping sail for American ports to return with coal.

Coal Conditions in Germany

In Germany, fuel conditions are represented to be exceedingly bad. On August 6th, at the Coal Conference of experts from all parts of Germany to devise means for increasing the production of coal "so that Germany will not freeze or starve during the coming winter," the chief result arrived at in the preliminary meetings of the Conference has been to emphasize the fact that the German situation also is desperate. It was recognized, however, that hard and intelligent work alone will contribute to alleviate the distress. Avenues for effort are being determined. Germany has succeeded in inducing France to admit that the supplying of her demand for 40,000,000 tons of coal annually would be a physical impossibility; and Germany further represents that she cannot hope to supply even enough coal for her own most urgent needs. She certainly will be hard pressed to find surplus coal with which to discharge, as she must first do, her

obligations to France. German counsellors have recommended that it will be best to sacrifice some of their national forests. Some industries which formerly used coal as fuel are now attempting to use wood. It is interesting to observe that in the tentative German plans for priority of those who are to receive coal it has been laid down that the first claim will be for the railways in order to ensure transportation of food. The claims of industry will come next, in order that credit may be created by the production of articles of commerce. Next, the mass of the people will receive coal for heating and cooking. It was commented that the prospects for the latter class are exceedingly slim.

The German Minister of Economics, in the course of the recent Debate on the coal situation, told the National Assembly of Germany that the Government was ready to import American coal for industrial purposes, and he indicated that it might be necessary this coming fall to discontinue passenger traffic in order to use all available equipment to haul coal and move crops.

Countries Coerced Respecting Coal

It is not necessary to extend our survey into the coal conditions of the smaller European countries. Norway and Sweden, Denmark, Holland and Switzerland, though neutral during the war, found themselves practically dependent upon the warring nations for coal and had to submit to the dictation of terms upon which that necessity would be supplied them. Both Great Britain and Germany released coal to these countries in exchange for food. Germany supplied Holland with coal on condition that food, especially vegetables and meat raised on Dutch soil, be sent to Germany; and you may recall that Germany's demand for supplying Switzerland with 200,000 tons of coal per month was gold at the rate of 40,000,000 francs monthly for nine months. Without touching further upon the stressful conditions in these smaller countries, the comments already made, especially respecting coal conditions in Great Britain, France, Italy and Germany, clearly prove the very serious conditions existent in European countries—and this, may I add, at a time when every effort is being made to re-establish mercantile and other conditions on bases approaching what they were prior to the war. Most assuredly this means keen competition for any available coal, and in this respect the governments and peoples of Europe are looking for a maximum of relief through coal shipments from the United States.

United States' export coal is a phase of the world coal problem in which Canada is deeply interested, because she yearly imports from 15,000,000 to 20,000,000 tons of coal—anthracite and bituminous—from the States.

Countries May be Forced to Embargo

Now, in the statement I am about to make I wish to emphasize that it is in no sense my intention to suggest that it is, or that it would become, the arbitrary desire of the United States to deprive Canada of the coal which at present is so necessary to life in this country. Of course with their co-operation, we have in measure become dependent upon their coal fields, and it will be expected that the States, in all fairness, will facilitate any necessary future readjustment connected with Canada's fuel supply. It is important, however, to take cognizance of the fact that a nation, pressed by the demands of its own people, may be compelled, under certain conditions, to deprive other nations—in part at least—of even the necessities of life until the needs of its own citizens are met. No country can be expected to send out of its confines that which is essential to the very existence of its own people. Personally, I do not believe that the United States, or any other country with a large outlook on present world affairs, will allow whole nations, especially those with whom they have been allied, to suffer direst distress with respect to fuel without seeking to alleviate it to the greatest possible extent.

When communities in Canada and the States during previous coal shortages have been in need of coal, certain communities adjacent to other sources of supply, such as wood, softer grades of coal, etc., were compelled to use these in order that the supplies elsewhere available could be distributed to those in greatest need. Correspondingly, it would not be surprising if a country like Canada, with vast fuel resources, were directed to speed up its utilization of its own fuel, and would not be left undisturbed, so to speak, in its enjoyment of burning what is now one of the luxuries of the world, namely, anthracite from the coal fields of Pennsylvania.

Coal Conditions in the United States

Let us next note what in general are the conditions in the great Republic across our border. Coal production in the United States has dropped substantially behind what it was during the war years. If the present rate of production of bituminous coal is maintained for the remaining 21 weeks of the coal year, the production will about equal the output of 1913. The production of anthracite is increasing over what it was a few weeks ago, but is still short of the demand. The coal stocks of the United States have been depleted. There is great demand for transportation. Car shortage will accentuate itself with the demand for cars to move the grain crop. The exit of miners back to Europe, serious strikes, and other factors, have contributed

to curtail coal production and distribution in that country. If more serious strikes should occur in the States, it will tend to make the supplying of coal to other countries, including Canada, still more precarious. Canada cannot afford to overlook how her own interests may at any time become involved by serious coal strikes in the States. These strikes are an ever-present menace. Speaking in the United States Senate on August 8th, Senator King, of Utah, stated that he had heard "that there was a programme to organize a great strike now, tie up the transportation system and take over the railroads, then next winter, when the people were shivering for want of coal, organize another strike in the mines, cut off the country's fuel supply, and take over the mines." The Senator expressed the hope—and which we all share—that government authority will be able to prevent such extremes being reached. I simply quote the Senator's statement as indicating possibilities which he thought of sufficient importance to bring formally to the attention of his colleagues. It is clear, therefore, that coal production in the States must necessarily fall short of meeting even the most pressing demands.

Common National Aims and Sympathies

Canada is indeed exceedingly fortunate in being neighbour to a country whose national aims and sympathies are so akin to its own. During the war both countries have manifested special interchange of courtesies. In the past coal shortage, for example, the Fuel Controller, Dr. H. A. Garfield, announced that recognition of Canada's needs for coal would be on the same basis as though she were one of the states of the Union. Our own Fuel Controller, Mr. C. A. Magrath, rendered signal service to both countries. I like to recall the sentiment manifested by our neighbours when great distress has arisen due to necessity corresponding to that begotten of the Halifax catastrophe—and such sentiment has been reciprocated by Canadians when conditions have been reversed. The Governor of Massachusetts telegraphed assuringly, "The people of the Commonwealth of Massachusetts are ready to answer any call that may be made upon us. Massachusetts stands ready to go the limit in rendering every assistance you may be in need of." The Governor of Maine telegraphed, "Any help Maine can give is yours," while many others sent corresponding messages. These sentiments cannot better be summed up than in the inspiring message sent by President Wilson to

"His Excellency the Governor-General
of Canada:

"In presence of the awful disaster at Halifax the people of the United States offer to their

noble brethren of the Dominion their heart-felt sympathy and grief, as is fitting at this time, when to the ties of kinship and community of speech and of material interests are added the strong bonds of union in the common cause of devotion to the supreme duties of national existence."

Obviously, so long as such sentiments govern men's actions, the people living on this continent cannot be deprived of that which is essential to their existence. Nevertheless, with the growing scarcity of coal, the United States, no matter what her good will or desire towards Canada may be, may not be able to cope with her own and with the prevailing world need. There is no doubt that in the spirit and disposition manifested in the statements just quoted our neighbour will see that Canada is fairly dealt with. We should not, however, trespass unduly upon friendly accommodation.

Canada Must Bestir Herself

As we have now seen, the present need of coal is urgent and world-wide. If the United States, either in the interest of her own people or in the interests of peoples whom she may conclude to be more needy than Canada, should decide that it is more necessary to supply such nations with coal, with the result that Canada's normal supply be substantially reduced, who may reasonably find fault with such a course? Even apart from governmental action, could anyone find fault with the United States coal merchants if, in their efforts to capture as much as possible of the 160,000,000 tons of annual international coal trade, they sought to deal where they could do so most advantageously? If, under such circumstances, Canada be judged to be not the best market for the United States coal dealer, from whence does Canada hope to supplement any substantial lack in supply of her coal demand? Let me emphasize the fact that there is nothing new in these possibilities so far as Canada is concerned. The handwriting on the wall has for years been legible. The whole problem has been one calling for ablest statesmanship and not for political or other temporizing and expediency. The problem will never yield to any makeshift policy. I have often marvelled that so little has actually been accomplished with respect to its permanent solution.

It is gratifying to realize that serious effort is now being made towards the development of our lignite and peat resources; also, towards the increased utilization of our coal fields in the East and in the West. I understand that work preparatory to the construction of the carbonized lignite briquetting plant to be erected under the direction of

the Honorary Advisory Council for Scientific and Industrial Research for the Dominion Government is being pressed ahead with despatch. This is to have a capacity of 30,000 tons of briquettes per annum. It would take over 600 such plants to replace our present coal importation from the States. However, we are very glad that this start has been made.

From the foregoing comments it is evident that an intelligent outlook upon world conditions shows scarcely any aspect of them to be of more serious moment—immediate or prospective—than this coal problem. During these warm days we should be careful to take our counsel and warnings from an intelligent outlook upon these conditions and what they betoken for the future, rather than from our feelings based upon the present state of the thermometer. Whether conditions of curtailed fuel supply for Canada be delayed from materializing this coming winter or next winter, or until some time in the future, nevertheless, as I stated before, I am firmly convinced that there is no menace to Canada's economic and general welfare at all comparable to the fact that she is at present so largely dependent upon a foreign country for her fuel needs. Without this foreign supply Canada most assuredly would be put to desperate straits. Gentlemen, is not the fuel problem of this Dominion one of magnitude and great gravity?

Canada's Water-Power Heritage

Canada, it is true, is richly endowed with water-powers, but she can never depend upon this asset as a sole source of heat. We have about 19,000,000 estimated 24-hour low-water horsepower, of which less than 2,500,000 horsepower has been developed. By no means may all the water-powers be economically developed.

For many years past I have been emphasizing the comparatively limited use which can be made of electric energy as a wholesale substitute for coal for heating—including the heating of buildings. * There is no use whatever entertaining hope that hydro-electric energy as a heating agent may become an adequate substitute for coal for the citizens of Canada, and consequently a realization of this

* Consult *Annual Reports of Commission of Conservation*, Ottawa; also article, "Electricity Will Not Replace Coal," in *Industrial Canada*, Toronto, April, 1918; also the official minutes of the meeting held by Ontario municipalities at Galt on "Fuelless-Monday," published in the *Monetary Times* for 25th October, 1918, pp. 5-8, and concluded in the issue of 1st November, 1918, pp. 18-22. Consult also, "Fuel Problem of Canada—Some National and International Aspects," in *General Electric Review*, Vol. XXII, No. 6, pp. 465-474. Also consult "Possibilities Ahead of the Gas Industry as Revealed by a Digest of Reports from Various Sources," by G. W. Allen in *Proceedings of 11th Annual Meeting of the Canadian Gas Association*, 1918.

fact will facilitate the concentration of effort upon sources from which real relief may be derived.

Canada's Coal Reserves

What, then, is to be done? In a word, we must develop our own coal reserves. Considering the country as a whole, Canada in respect of quantity, quality and accessibility for mining purposes, possesses coal deposits which compare favourably with those of the greatest coal mining countries of the world. Speaking in round numbers, she has nearly 1,000,000,000 tons of semi-anthracite coal, 315,000,000,000 tons of bituminous coal, and 10,000,000,000,000 tons of sub-bituminous coal and lignite.

I shall not dwell on these enormous reserves. It seems out of place to emphasize how much we have latent when alongside of it we are not able to show how beneficially these assets are being used both for our own support and for the assistance of other needy nations. When the population of the Prairie Provinces are insured against yearly fuel shortage, we shall be more interested in hearing emphasis laid upon the enormous fuel reserves of these provinces; and when Canada produces more than her present amount of 2 per cent. of her total annual oil consumption we shall be more interested in hearing emphasis placed upon the statement that we have the biggest oil fields in the world.

Canada's only sane policy is to develop, and that as rapidly as possible, both her own fuel and power resources, and by co-ordination of transportation and other cognate agencies to provide for the distribution and storage of fuel in all communities of the Dominion. In some respects it is more important to move coal and have it adequately stored and distributed throughout Canada than it is to remove the grain out of the country.

Help the Needy to Store Coal

In this connection may I comment that we have heard so repeatedly about the necessity of laying in our coal supplies **early** that I have wondered why no provision has been made to aid that large proportion of the wage-earning population who covet the ability to lay in their coal early, but who are unable to finance the proposition. The agriculturist is not only counselled to market his grain, but governmental and financial agencies make exceptional provision by way of furnishing funds and credit to facilitate grain-marketing operations. Does it not seem as though some corresponding provision, with resulting insurance to the stability and advancement of the country, could be provided in connection with the laying in of the annual coal supply?

The Gas Industry and Research

You, Gentlemen, here assembled represent a

great and nation-wide industry. I know of none which offers greater results in connection with the economical usage of coal—and let it be understood that greater economies in the burning of coal are going to be absolutely demanded in the future. I know that the art of gas manufacture has made great strides. I am not aware whether your organization has any central research laboratory, where your more technical problems are solved, and from which you may derive expert counsel—a kind of common clearing house for that more highly specialized technical information which, when applied, will efficiently build up your industry and fit it for world competition. With such a laboratory you might be able to discover methods for further refining some of your by-products, or for dealing with them in other ways so as substantially to enhance your profits and at the same time not unduly trespass upon other fields of commercial activity. However, this is not the prime subject of discussion, but I thought it was worth while just to express this personal view with regard to the great future that lies before you.

Conclusion

In concluding may I digress a moment, for there is one aspect of this fuel situation which I conceive to be of essential importance, and I feel it desirable just to mention it. In so doing I know you will not feel that I am seeking to impose upon you any view foreign to the main theme of our discussion.

A few years ago I attended an Irrigation Conference in Western Canada. At that time great development was taking place in the irrigation areas, and in the enthusiasm of these circumstances the official programme of the Conference bore this motto: "Intelligent men no longer pray for rain—they pay for it." At the time I felt that this suggested an ill-advised spirit in which to undertake irrigation or any other work. Probably those who selected the motto did so somewhat unwittingly and did not stop to consider what it may imply. Man certainly could pay for the digging of the ditches and for the construction of other physical structures incident to irrigation development, but man does not own the water nor can he, by payment, command the rain to replenish it.

For a number of years my work in London took

me past that busiest spot in the world—the Royal Exchange—and I used to observe upon its pediment the motto selected by Prince Albert from the Scriptures of Truth: "The Earth is the Lord's and the Fulness Thereof."

Now, what I wish here to suggest is: that in any problem, especially in one of the magnitude and seriousness of the fuel problem of Canada, we cannot afford to deal with it solely on the basis that we, of ourselves, are alone sufficient best to solve it. The Creator has placed coal and other resources in the earth beneficently to serve the needs of man, and in certain ways man, of himself, has not the control over all essential factors germane to these resources nor the full wisdom how best to dispose of them. If, for example, man could simply have paid for the rain or its equivalent, we may assume that we would not be experiencing the distressing conditions of dryness which this season have existed over extensive areas upon which we have stimulated settlement in our Northwest. Correspondingly, I wish to suggest that in the development of Canada's fuel resources for the need and general benefit of the people there certainly is required more wisdom than has hitherto been manifested in connection with this problem, and this wisdom, I believe, concurrently with our own efforts and in fitting humility, must be sought and received from the One to whom, as the motto just cited states, belongs 'the earth and the fulness thereof.'

Gentlemen, you operate in a great and unique field which comprises the effecting of economies by subjecting raw coal to such manufacturing processes as will save the valuable by-products and at the same time produce, even from inferior grades of coal, a satisfactory and clean-burning fuel. It is within your province also to aid in effecting a proper co-ordination of the uses of electricity, coal and gas, according to their respective spheres of most efficient use. This oftentimes will result in a greater utilization of gas. Those in the forefront of the gas-producing industries are justified in looking forward to the greatly increased use of this commodity, and to the fuller recovery of by-products. Your contribution to the solution of the national fuel problem of Canada is invaluable. Your field has an ever-extending horizon. I trust you will all find it a truly profitable one for the enthusiastic exercise of your talents.